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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,058	03/24/2004	Leonard Forbes	400.288US01	4217
27073	7590	12/12/2005	EXAMINER	
LEFFERT JAY & POLGLAZE, P.A. P.O. BOX 581009 MINNEAPOLIS, MN 55458-1009			NGUYEN, THINH T	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 12/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/808,058	Applicant(s) FORBES, LEONARD	
	Examiner Thinh T. Nguyen	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/3/05, 9/7/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED OFFICE ACTION**

1. Applicant's election of claims 1-7 for prosecution without traverse in the communication with the Office on 10/26/2005 is acknowledged.

### **Specification**

2. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant cooperation is requested in correcting any errors of which the applicant may become aware in the specification.

### **Claim Rejections - 35 USC § 102**

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(a/b/e) that form the basis for the rejections under this section made in this office action.

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

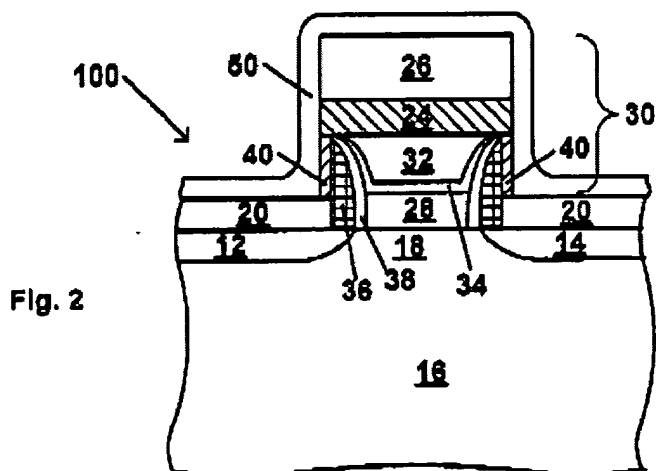
4. Claim 1,2, 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Takasu ( U.S. Patent 5,365,094 ) or under 35 U.S.C. 102(e) as being anticipated by Yang et al. (US patent 6,660,588).

#### REGARDING CLAIM 1

Takasu ( the abstract, fig 1) disclose memory transistor comprising: a substrate ( fig 1 region 14) having a plurality of source/drain regions ( fig 1 region 26,28 ) , the source/drain regions having a different conductivity type ( n-type) than the remainder of the substrate (p-type); a metal floating gate ( fig 1 reference 20 ) overlying the substrate; a metal oxide inter-gate insulator layer formed over the metal floating gate ( fig 1 layer 18,column 5 line 17-21) ; the inter-gate insulator layer having a dielectric constant ( noted Takasu uses  $\text{PbTiO}_3$  that have a dielectric constant of about 20 to 200 ) that is greater than a dielectric constant of silicon dioxide(  $\text{SiO}_2$  have a dielectric constant of about 4); and a control gate ( fig 1 reference 16) formed on top of the inter-gate insulator layer.

Similarly, Yang ( the abstract, fig 2,control gate 26, intergate dielectric 24, metal floating gate 32 ,column 8 line 58) discloses the same invention. Noted that Yang disclosed that layer 24 intergate can be from high K (  $K > 10$  compare with the K of  $\text{SiO}_2$  of about 4) metal oxide such as  $\text{Al}_2\text{O}_3$  or  $\text{HfO}_2$  therefore correctly anticipated claim 1.

3



REGARDING CLAIM 2

Takasu discloses ( the abstract line 7) that the dielectric layer 22 between the floating gate and the substrate is high dielectric constant.

Similarly Yang ( column 16 lines 22- 29, fig 2 layer 28) discloses the same invention.

REGARDING CLAIM 7

Takasu discloses ( the abstract line 11) that the control gate is formed of metal meanwhile Yang ( column 19 lines 24-31 ) discloses that control gate 28 can be metal.

**Claim Rejections - 35 USC § 103**

5. The following is a quotation of U.S.C. 103(a) which form the basis for all obviousness rejections set forth in this office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **The Examiner noted that claims 3-6 are hybrid product by process claim .** for example in claim 3 the limitation **aluminum oxide grow by oxidation** is taken to be a product by process limitation and considered *non-limitation*. In a product-by-process claim, it is the patentability of the claimed product and not of the recited process steps which must be established. Therefore, when the prior art discloses a product which reasonably appears to be identical with or only slightly different than the product claimed in a product-by process claim, a rejection based on sections 102 or 103 is fair. The Patent Office is not equipped to manufacture

products by a myriad of processes put before it and then obtain prior art product and make physical comparisons therewith. In re Brown, 173 USPQ 685 (CCPA 1972). Also, a product by process claim directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See In re Fessman, 180 USPQ 324, 326 (CCPA 1974); In re Marosi et al., 218 USPQ 289, 292 (Fed. Cir. 1983); and particularly In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps, which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious product produced by a new method is not a patentable product, whether claimed in "product by process" claims or not.

Note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Marosi et al, 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above caselaw makes clear.

7. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (U.S. patent 6,660,588) in view of further remark.

**REGARDING CLAIM 3-6**

Yang et al ( the abstract, fig 2,column 18 lines 60-67) disclose all the invention except for the detail about specific metal or metal oxide. These limitations, however, are considered obvious since it has been held to be within the general routine ordinary skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

Noted that Yang discloses that the intergate dielectric and the floating gate dielectric can be made of the same material and also for the rationale discussed in paragraph 6 of the Office Action, all the product by process limitations recited in claims 3-6 are not considered.

8. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and the page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

9. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to be abandoned (see M.P.E.P. 710.02(b)).

**CONCLUSION**

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thinh T Nguyen whose telephone number is 571-272-1790.

The examiner can normally be reached on Monday-Friday 9:30am-6: 30pm.



Art Unit: 2818

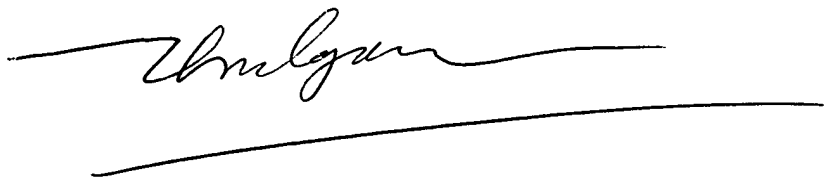
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached at 571-272-1787.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval [ PAIR ] system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**Thinh T. Nguyen**

Art Unit 2818

A handwritten signature in black ink, appearing to read 'Thinh T. Nguyen', is written over a horizontal line. The signature is fluid and cursive.